

Form PTO-1449

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

Serial No.

03-214-A

10/789,831

INFORMATION DISCLOSURE
STATEMENT BY APPLICANTApplicant: *Mirkin, et al. Bao et al.*Filing Date:
February 27, 2004

Group: 8249



U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
<i>—</i>	1.	6,361,944	03/26/02	Mirkin, et al.	435	6	06/25/99
<i>—</i>	2.	6,417,340	07/09/02	Mirkin, et al.	536	23.1	10/20/00
<i>L</i>	3.	6,495,324	12/17/02	Mirkin, et al.	435	6	10/20/00
<i>L</i>	4.	6,506,564	01/14/03	Mirkin, et al.	435	6	06/26/00
<i>L</i>	5.	6,582,921	06/24/03	Mirkin, et al.	435	6	09/20/01
<i>L</i>	6.	6,602,669	08/05/03	Mirkin, et al.	435	6	07/11/01
<i>L</i>	7.	6,610,491	08/26/03	Mirkin, et al.	435	6	09/28/01
<i>L</i>	8.	6,645,721	11/11/03	Mirkin, et al.	435	6	09/20/01
<i>L</i>	9.	6,673,548	01/06/04	Mirkin, et al.	435	6	09/28/01
<i>L</i>	10.	6,677,122	01/13/04	Mirkin, et al.	435	6	10/11/01
<i>L</i>	11.	6,682,895	01/27/04	Mirkin, et al.	435	6	10/12/01
<i>L</i>	12.	6,709,825	03/23/04	Mirkin, et al.	435	6	09/28/01
<i>L</i>	13.	6,720,147	04/13/04	Mirkin, et al.	435	6	10/12/01
<i>L</i>	14.	6,720,411	04/13/04	Mirkin, et al.	536	23.1	10/10/01
<i>L</i>	15.	6,726,847	04/27/04	Mirkin, et al.	216	90	11/30/01
<i>L</i>	16.	6,730,269	05/04/04	Mirkin, et al.	422	68.1	10/12/01
<i>L</i>	17.	6,740,491	05/25/04	Mirkin, et al.	435	6	09/28/01
<i>L</i>	18.	6,750,016	06/15/04	Mirkin, et al.	435	6	03/28/01
<i>L</i>	19.	6,759,199	07/06/04	Mirkin, et al.	435	6	09/20/01
<i>L</i>	20.	6,767,702	07/27/04	Mirkin, et al.	435	6	01/12/01
<i>L</i>	21.	6,773,884	08/10/04	Mirkin, et al.	435	6	08/07/01
<i>L</i>	22.	6,777,186	08/17/04	Mirkin, et al.	435	6	10/15/01
<i>L</i>	23.	2002/0137070 A1	09/26/02	Mirkin, et al.	435	6	10/10/01
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<i>L</i>	26.	2002/0177143 A1	11/28/02	Mirkin, et al.	435	6	12/28/01
<i>L</i>	27.	2002/0192687 A1	12/19/02	Mirkin, et al.	435	6	03/27/02
<i>L</i>	28.	2003/0054358 A1	03/20/03	Mirkin, et al.	435	6	10/11/01
<i>L</i>	29.	2003/0068622 A1	04/10/03	Mirkin, et al.	435	6	10/12/01

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<i>h</i>	30.	2003/0068638 A1	04/10/03	Mirkin, et al.	435	6	08/02/02
<i>h</i>	31.	2003/0087242 A1	05/08/03	Mirkin, et al.	435	6	12/07/01
<i>h</i>	32.	2003/0113740 A1	06/19/03	Mirkin, et al.	435	6	04/18/02
<i>h</i>	33.	2003/0124528 A1	07/3/03	Mirkin, et al.	435	6	10/12/01
<i>h</i>	34.	2003/0129608 A1	07/10/03	Mirkin, et al.	435	6	05/22/02
<i>h</i>	35.	2003/0143538 A1	07/31/03	Mirkin, et al.	435	6	10/11/01
<i>h</i>	36.	2003/0143598 A1	07/31/03	Mirkin, et al.	435	6	11/08/02
<i>h</i>	37.	2003/0148282 A1	08/07/03	Mirkin, et al.	435	6	10/12/01
<i>h</i>	38.	2003/0207296 A1	11/06/03	Mirkin, et al.	435	6	10/08/02
<i>h</i>	39.	2003/0211488 A1	11/13/03	Mirkin, et al.	435	6	06/14/02
<i>h</i>	40.	2004/0038255 A1	02/26/04	Mirkin, et al.	435	6	03/26/03
<i>h</i>	41.	2004/0053222 A1	03/18/04	Mirkin, et al.	435	6	07/02/03
<i>h</i>	42.	2004/0072231 A1	04/15/04	Mirkin, et al.	435	6	08/13/03
<i>h</i>	43.	2004/0086897 A1	05/06/04	Mirkin, et al.	435	6	05/07/03
<i>h</i>	44.	2004/0101889 A1	05/27/04	Mirkin, et al.	435	6	08/04/03

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		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
<i>1/27/06</i>	<i>h</i>	45.	WO 98/04740 A1	02/05/98	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	46.	WO 00/33079 A1	06/08/00	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	47.	WO 01/00876 A1	01/04/01	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	48.	WO 01/051665 A2	07/19/01	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	49.	WO 01/073123 A3	10/04/01	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	50.	WO 02/004681 A3	01/17/02	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	51.	WO 02/018643 A3	03/07/02	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	52.	WO 02/046472 A3	06/13/02	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	53.	WO 02/079490 A3	10/10/02	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	54.	WO 02/096262 A2	12/05/02	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	55.	WO 2003/008539 A3	01/30/03	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	56.	WO 2003/035829 A3	05/01/03	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	57.	WO 2003/081202 A3	10/02/03	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	58.	WO 2003/087188 A1	10/23/03	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	59.	WO 2003/095973 A2	11/20/03	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	60.	WO 2004/004647 A3	01/21/04	PCT WO	—	—	
<i>1/27/06</i>	<i>h</i>	61.	WO 2004/053105 A2	06/24/04	PCT WO	—	—	

Examiner <i>[Signature]</i>	Date Considered <i>1/27/06</i>
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



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<i>[Handwritten mark]</i>	1.	5,151,510	09/29/92	Stec, et al.	536	25.3	
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	4.	6,506,564 B1	01/14/03	Mirkin, et al.			

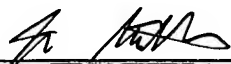
FOREIGN PATENT DOCUMENTS

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<i>[Handwritten mark]</i>	6.	PCT/US00/17507	1/4/01	PCT	wo			
<i>[Handwritten mark]</i>	7.	PCT/US01/01190	7/19/01	PCT	wo			
	8.	PCT/US02/16382	1/30/03	PCT				
	9.	PCT/US03/14100	11/20/03	PCT				

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

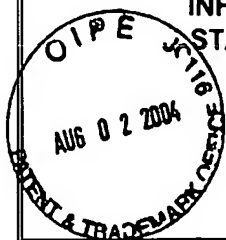
<i>[Handwritten mark]</i>	10.	Bassell, et al., "Single mRNAs Visualized by Ultrastructural In Situ Hybridization Are Principally Localized at Actin Filament Intersections in Fibroblasts", <i>The Journal of Cell Biology</i> , Vol. 126, No. 4, pp. 863-876 (August 1994)
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	11.	Braun, et al., "DNA-templated assembly and electrode attachment of a conducting silver wire", <i>Nature</i> , Vol. 391, p. 775-778 (February 19, 1998)
	12.	Braun-Howland, et al., "Development of a Rapid Method for Detecting Bacterial Cells <i>In Situ</i> Using 16S rRNA-Targeted Probes", <i>Biotechniques</i> , Vol. 13, No. 6, pp. 928-932 (1992)
	13.	Frens, et al., "Controlled Nucleation for the Regulation of the Particle Size in Monodisperse Gold Suspensions", <i>Nature Physics Science</i> , Vol. 241, pp. 20-22 (January 1, 1973)
	14.	Grabar, et al., "Preparation and Characterization of Au Colloid Monolayers", <i>Anal. Chem.</i> , Vol. 67, pp. 735-743 (1995)
	15.	LaPlanche, et al., "Phosphorothioate-modified oligodeoxyribonucleotides. III. NMR and UV spectroscopic studies of R _p -R _p , S _p -S _p , and R _p -S _p duplexes, [d(GG _s AATTCC)] ₂ , derived from diastereomeric O-ethyl phosphorothioates", <i>Nucleic Acids Research</i> , Vol. 14, No. 22, pp. 9081-9093 (1986)
	16.	Letsinger, et al., "Use of a Steroid Cyclic Disulfide Anchor in Constructing Gold Nanoparticle - Oligonucleotide Conjugates", <i>Bioconjugate Chem.</i> , Vol. 11, pp. 289-291 (2000)
	17.	Stec, et al., "Automated Solid-Phase Synthesis, Separation, and Stereochemistry of Phosphorothioate Analogues of Oligodeoxyribonucleotides", <i>J. Am. Chem. Soc.</i> , Vol. 106, pp. 6077-6079 (1984)
	18.	Stein, et al., "Physiochemical properties of phosphorothioate oligodeoxynucleotides", <i>Nucleic Acids Research</i> , Vol. 16, No. 8, pp. 3209-3221 (1988)
	19.	Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes", <i>J. Am. Chem. Soc.</i> , Vol. 120, pp. 1959-1964 (1998)
	20.	Uhlmann, et al., "Antisense Oligonucleotides: A New Therapeutic Principle", <i>Chemical Reviews</i> , Vol. 90, No. 4, pp. 544-584 (June 1990)
	21.	Zon, et al., <u>Oligonucleotides and Analogues: A Practical Approach</u> , pp. 87-108, (F. Eckstein, ed.), Oxford University Press, Oxford England
	22.	Zon, et al., "Phosphorothioate oligonucleotides: chemistry, purification, analysis, scale-up and future directions", <i>Anti-Cancer Drug Design</i> , Vol. 6, pp. 539-568 (1991)

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Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 03-214-A	Serial No. 10/789,831
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Applicant: Bao, et al.	
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U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
<i>11/27/06</i>	<i>1</i>	5,288,609	02/08/94 02/24/94	Engelhardt et al Mroczkowski, et al.	435	6	
<i>11/27/06</i>	<i>2</i>	5,284,748	02/22/94 02/28/94	Mroczkowski et al Engelhardt, et al.	435	6	
<i>11/27/06</i>	<i>3</i>	5,360,895	11/01/94	Hainfield, et al.	530	391.5	
<i>11/27/06</i>	<i>4</i>	5,384,265	01/24/95	Kidwell, et al.	436	525	
<i>11/27/06</i>	<i>5</i>	5,472,881	12/05/95	Beebe, et al.	436	94	
<i>11/27/06</i>	<i>6</i>	5,599,668	02/04/97	Stimpson, et al.	435	6	
<i>11/27/06</i>	<i>7</i>	5,637,508	06/10/97	Kidwell, et al.	436	525	
<i>11/27/06</i>	<i>8</i>	5,751,018	05/12/98	Alivisatos, et al.	257	64	
<i>11/27/06</i>	<i>9</i>	5,939,021	08/17/99	Hansen, et al.	432	55	
<i>11/27/06</i>	<i>10</i>	5,990,479	11/23/99	Weiss, et al.	250	307	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes No	
<i>11/27/06</i>	<i>11</i>	WO 93/10564	27 May 93	PCT WO	—	—		
<i>11/27/06</i>	<i>12</i>	WO 98/10289	12 March 98	PCT WO	—	—		
<i>11/27/06</i>	<i>13</i>	WO 99/23258	14 May 99	PCT WO	—	—		
<i>11/27/06</i>	<i>14</i>	WO 99/21934	06 May 99	PCT WO	—	—		
<i>11/27/06</i>	<i>15</i>	WO 99/20789	29 April 99	PCT WO	—	—		

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

<i>11/27/06</i>	16.	O.D. Velev, et al., "In Situ Assembly of Collordal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, May 25, 1999
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FORM PTO-1449 (Rev. 2-32)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No.	Serial No.
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		03-214-A	10/789,831
		Applicant:	
		Bao, et al.	
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U.S. PATENT DOCUMENTS


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FOREIGN PATENT DOCUMENTS

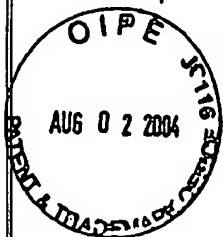
Document Number	Date	Country	Class	Subclass	Translation Yes No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

1.	Brada, et al., "Golden Blot" – Detection of Polyclonal and Monoclonal Antibodies Bound to Antigens on Nitrocellulose by Protein A-Gold Complexes, <i>Analytical Biochemistry</i> , Vol. 42, pp. 79-83 (1984) U.S.
2.	Dunn, et al., "A Novel Method to Map Transcripts: Evidence for homology between an Adenovirus mRNA and Discrete Multiple Regions of the Viral Genome, <i>Cell</i> , Vol. 12, pp. 23-36, (1997) U.S.
3.	Hacker, "High performance Nanogold – Silver in situ hybridisation, <i>Eur. J. Histochem</i> , Vol. 42, pp. 111-120 (1998) U.S.
4.	Ranki, et al., "Sandwich hybridization as a convenient method for the detection of nucleic acids in crude samples," <i>Gene</i> , Vol. 21, pp. 77-85 (1983) U.S.
5.	Romano, et al., "An antiglobulin reagent labelled with colloidal gold for use in electron microscopy," <i>Immunochemistry</i> , Vol. 11, pp. 521-522 (1974) Great Britain

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Group: TBA

DISSENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date

FOREIGN PATENT DOCUMENTS								
		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
	1.	WO 82/04460	19 March 1982	PCT WO				*
2	2.	WO 90/02205	8 March 1990	PCT WO				*

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FORM PTO-1449 (Rev. 2-32)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 03-214-A	Serial No. 10/789,831
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L	1.	4,996,143	02/26/91	Heller, et al.	435	6	04/13/90
de	2.	5,508,164	04/16/96	Kausch, et al.	435	6	10/29/93
de	3.	5,922,537	07/13/99	Ewart, et al.	435	6	11/8/96
de	4.	5,972,615	10/26/99	An, et al.	435	6	01/21/98
de	5.	6,264,825	07/24/01	Blackburn, et al.	205	777.5	06/23/99
L	6.	6,214,560	04/10/01	Yguerabide, et al.	435	7.1	04/18/97

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		Document Number	Date	Country	Class	Subclass	Translation	
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L	7.	WO 94/29484	12/22/94	PCT WO	—	—		
L	8.	WO 00/25136	05/04/00	PCT WO	—	—		

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L	9.	Mohanty J., et al. "Pulsed laser excitation of phosphate stabilized silver nanoparticles," <i>Proc. Indian Acad. Sci.</i> , Vol. 112, No. 1, p. 63-72.					
L	10.	Nicewarner- Peña S., et al., "Hybridization and Enzymatic Extension of Au Nanoparticle-Bound Oligonucleotides," <i>J. Am. Chem. Soc.</i> , Vol. 124, p. 7314-7323 (2002)					
L	11.	Whitesides G.M., et al., "Soft Lithography in Biology and Biochemistry," <i>Annu. Rev. Biomed. Eng.</i> , p. 335-373 (2001)					

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	1.	5,599,668	02/04/97	Stimpson, et al.			
	2.	5,751,018	05/12/98	Alvisatos, et al.			
	3.	5,990,479	11/23/99	Weiss, et al.			

FOREIGN PATENT DOCUMENTS

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							Yes	No
1/27/04	4.	WO 92/04469	3/19/92	PCT WO				X

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5.	Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," <i>Proc. Natl. Acad. Sci.</i> , Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S.
6.	Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," <i>Journal of Cluster Science</i> , Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S.
7.	Storhoff, et al., "One Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," <i>J. Am. Chem. Soc.</i> , Vol. 120, pp. 1961-1964, American Chemical Society (1998) U.S.
8.	Tomlinson, et al., "Detection of Biotinylated Nucleic Acid Hybrids by Antibody Coated Gold Colloid," <i>Analytical Biochemistry</i> , Vol. 171, pp. 217-222, Academic Press, Inc. (1988) U.S.
9.	Velek, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S.

EXAMINER	DATE CONSIDERED
	1/27/04

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FORM PTO-1449 (Rev. 2-32)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 03-214-A	Serial No. 10/789,831
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Applicant: Bao, et al.	
		Filing Date: February 27, 2004	Group: TBA

U.S. PATENT DOCUMENTS


Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation Yes No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

10.	Xu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and Yb ₂ Cu ₃ O _{7-δ} ," <i>J. Am. Chem. Soc.</i> , Vol. 119, pp. 235-236, American Chemical Society (1997) U.S.
11.	Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, <i>Analytical Biochemistry</i> , Vol. 262, pp. 137-156 (1998) U.S.
12.	Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, <i>Analytical Biochemistry</i> , Vol. 262, pp. 157-176 (1998) U.S.

EXAMINER		DATE CONSIDERED	1/27/06
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<i>K</i>	1.	5,830,986	11/03/98	Merrill, et al.	528	332	10/28/96
<i>K</i>	2.	5,900,481	05/04/99	Lough, et al.	536	55.3	11/06/96
<i>K</i>	3.	6,203,989	03/20/01	Goldberg, et al.	435	6	03/25/99
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<i>K</i>	5.	6,277,489	08/21/01	Abbott, et al.	428	403	12/04/98
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<i>K</i>	8.	6,365,418	04/02/02	Wagner, et al.	436	518	05/18/00
<i>K</i>	9.	6,417,340	07/09/02	Mirkin, et al.	536	23.1	10/20/00

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<i>K</i>	10.	WO 93/25709	23 December 1993	PCT WO	—	—		
	11.	WO 98/04740	5 February 1998	PCT				
<i>K</i>	12.	WO 98/17317	30 April 1998	PCT WO	—	—		X
<i>K</i>	13.	WO 99/60169	25 November 1999	PCT WO	—	—		
	14.	WO 00/33079	8 June 2002	PCT WO	—	—		
<i>K</i>	15.	WO 01/00876	4 January 2001	PCT WO	—	—		

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		16. WO 01/51665	19 July 2001	PCT WO				
		17. WO 01/73123	4 October 2001	PCT				
1/27/06		18. WO 01/86301	15 November 2001	PCT				X
		19. WO 02/04681	17 January 2002	PCT				
		20. WO 02/18643	7 March 2002	PCT				
1/27/06		21. WO 02/36169	10 May 2002	PCT WO				
1/27/06		22. WO 02/46483	13 June 2002	PCT WO				
		23. WO 02/46472	13 June 2002	PCT				

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24.	Letsinger, R., et al., "Chemistry of Oligonucleotide-Gold Nanoparticle Conjugates," <i>Phosphorus, Sulfur and Silicon</i> , Volume 144, p. 359-362 (1999)
25.	Letsinger, R., et al., "Use of a Steroid Cyclic Disulfide Anchor in Constructing Gold Nanoparticle Oligonucleotide Conjugates," <i>Bioconjugate Chem</i> , p. 289-291 (2000)

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26.	Li Z., et al., "Multiple thiol-anchor capped DNA-gold nanoparticle conjugates," <i>Nucleic Acids Research</i> , Volume 30, p. 1558-1562 (2002)
27.	Nuzzo R., et al., "Spontaneously Organized Molecular Assemblies. 3. Preparation and Properties of Solution Adsorbed Monolayers of Organic Disulfides on Gold Surfaces," <i>J. Am Chem. Soc.</i> , Volume 109, p. 2358-2368 (1987)
28.	Otsuka, H., et al., "Quantitative and Reversible Lectin-Induced Association of Gold Nanoparticles Modified with α -Lactosyl- α -mercapto-poly(ethyleneglycol)," <i>J. Am Chem. Soc.</i> , Volume 123, p. 8226-8230 (2001)
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